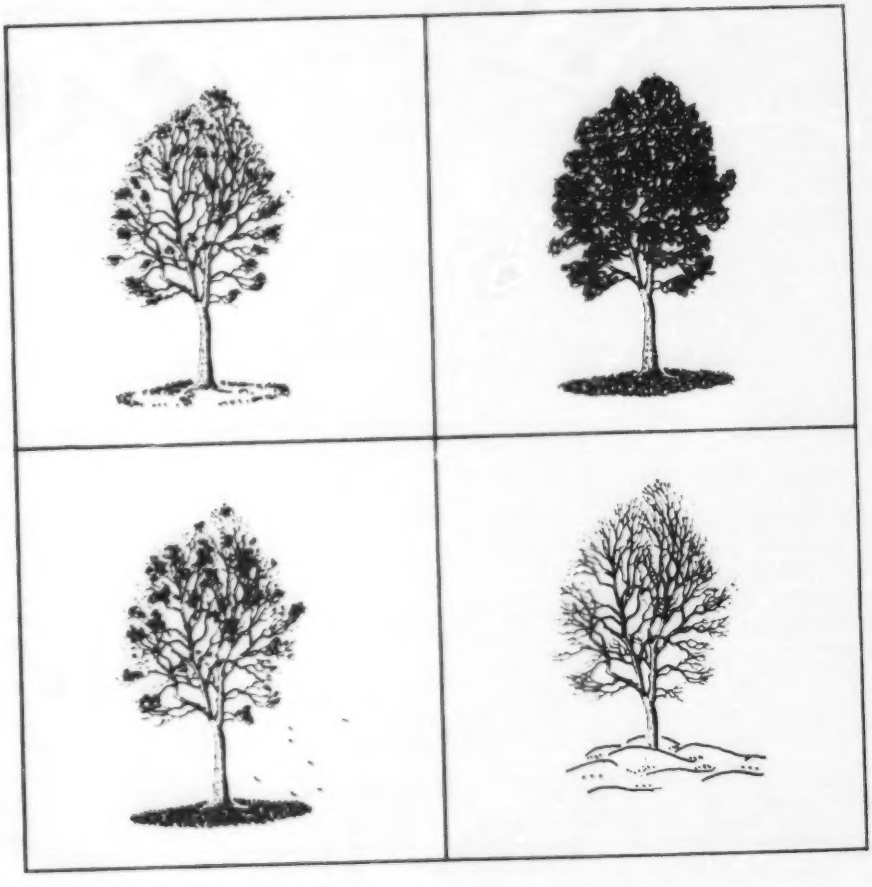
Annual Report

Year Ending March 31, 1974



Prince Edward Island Environmental Control Commission

ANNUAL REPORT

OF THE

PRINCE EDWARD ISLAND ENVIRONMENTAL CONTROL COMMISSION

FOR THE YEAR ENDING MARCH 31

1974

HON. WILLIAM M. GALLANT
MINISTER

ARTHUR J. HISCOCK
CHAIRMAN

OFFICIALS

OF THE

P.E.I. ENVIRONMENTAL CONTROL COMMISSION

The Honorable William M. Gallant
Minister-In-Charge

MEMBERS

Arthur J. Hiscock, Chairman
John Gilmore, Vice-Chairman
Fr. Charles Cheverie, Member
David Darlington, Member
George MacMurdo, Member
Donald Judson, Member
Sandy Griswold, Member
Dr. Avni Raad, Member
Dr. James Higgins, Member
Clive Stewart, Member
Donald Champion, Secretary

CHIEF ADMINISTRATIVE OFFICERS

Arthur J. Hiscock, General Manager
Donald Champion, Director, Environmental Protection Services
Dr. Bernard Dousse, Director, Water Resources
John Bain, Director, Environmental Conservation Services
Bill Phillips, Air & Solid Waste Management Section
Blair MacDonald, Utility Operations Section
Andre Lavoie, Environmental Education Coordinator
Stanley E. Vass, Environmental Policy Advisor

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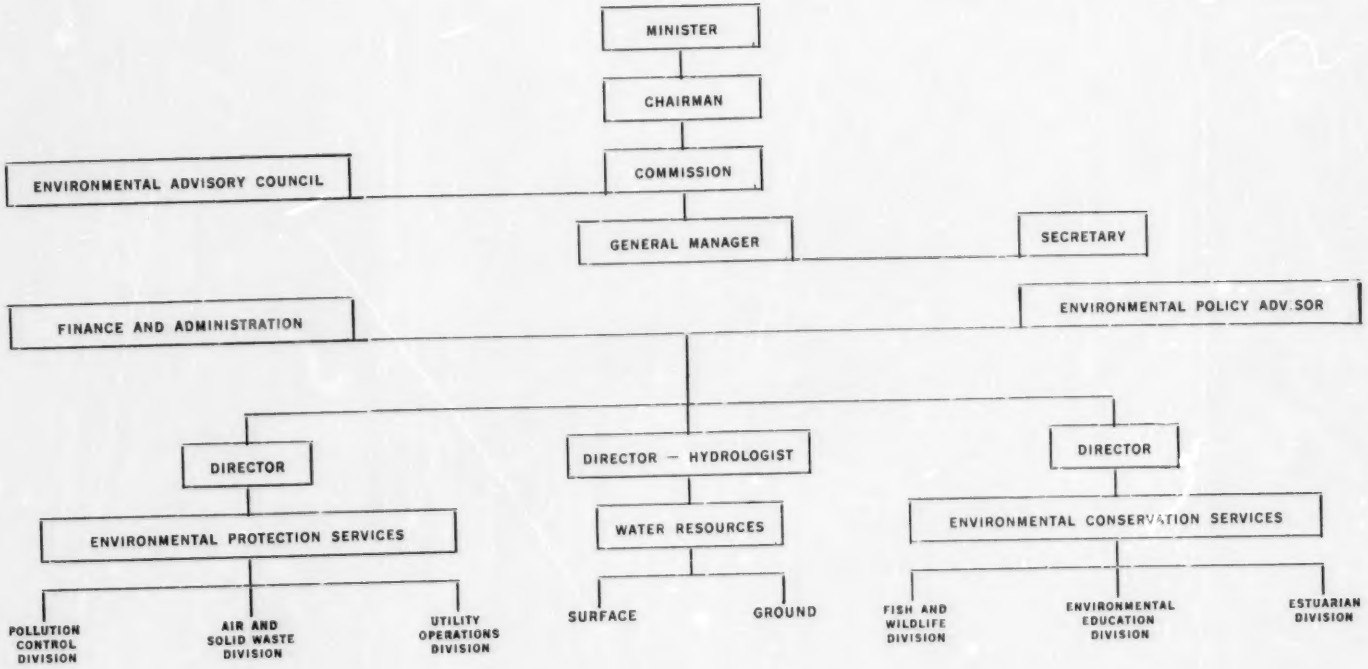
CHART 1 – ORGANIZATIONAL STRUCTURE
ENVIRONMENTAL CONTROL COMMISSION



TO HIS HONOR

THE HONORABLE J. GEORGE MACKAY

Lieutenant-Governor of the Province of Prince Edward Island

Sir:

I have the honor to submit herewith the Annual Report of the Prince Edward Island Environmental Control Commission for the period April 1, 1973 to March 31, 1974.

I have the honor to be, Sir:

Your Obedient Servant,

WILLIAM M. GALLANT
Minister

April 1, 1974

Hon. William M. Gallant

Minister-in-Charge

Environmental Control Commission

Province of Prince Edward Island

Sir:

It is a pleasure and honor to submit to you this third Annual Report of the Prince Edward Island Environmental Control Commission. The last year has seen further improvement in the Commission's management to better serve the public and other government departments and agencies. Relevant details are presented in divisional reports.

A few highlights of the Commission relative to our role were:

— The continuation of the construction of domestic waste water treatment facilities, particularly for the Town of Georgetown and the Town of Borden.

— Finalize the development of a Provincial Solid Waste Disposal Program and the planning of an eighteen month Demonstration Sanitary Landfill at Charlottetown.

— Completion of fish passage projects on Island Streams, to open up many miles of streams, for sea trout.

— Completion of a Study on Beverage Containers usage in this province.

On behalf of the staff, I would like to record our sincere appreciation for your interest and guidance.

Respectfully submitted,

A. J. HISCOCK
Chairman

PROGRESS OF THE COMMISSION

The Environmental Control Commission was formed April 21, 1971, by the amalgamation of the Prince Edward Island Water Authority and the Fish and Wildlife Division of the Department of Tourism. These were the original core units. To these were added the Division of Air & Solid Waste Management, Marine Estuaries Studies, Environmental Education and Information Section.

The role of the Environmental Control Commission, within the context of total function of Government, is to promote a balance between resource management, environmental protection and the quality of life. This role will be achieved through interdepartmental government planning of policies, programs and services.

These will generally be initiated and coordinated by the Environmental Control Commission in cooperation with other departments and agencies of the Provincial Government, other Governments and non-governmental organizations including industry and the private sector.

The concept is not to build up a large staff, but rather to have a well coordinated, efficient, multi-disciplined core staff of minimum size, plus the utilization of staff from other departments as required for enforcement, planning and services.

Additional major environmental tasks have been given to the Commission as a result of the additional duties and responsibilities being assigned to it by —

the Environmental Control Commission Act,
the Fish and Wildlife Act,
the Well Drillers' Act.

The Establishment Review Committee of Treasury Board has approved a submission that the Commission be realigned into three service units, each headed by a Director. The three units are —

Environmental Protection Services
Water Resources
Environmental Conservation Services

The Chairman reports directly to the Minister of Environment and Tourism, and the Commission functions independently of the Department for all aspects of its operation — budgeting, programs and staffing. In dealing with other governments and non-governmental organizations, there has been some confusion created in having an independent Commission and a Department of Environment and Tourism, which really has no direct involvement in environmental matters.

The Geologist position with the Department of Industry has been transferred to the Water Resources Division for the following reasons—

(a) A considerable amount of geological information is available from well drillers operations and geophysical logging.

(b) Geologist could be gainfully employed in designing a program of assistance to well drillers.

(c) Division needs the service of a Professional for geophysical surveys.

(d) Geologist could be made available as required to the Department of Industry.

(e) For oil drilling, oil spills, etc., the Commission has a responsibility to protect the environment.

The need for an Environmental Education Program in the province has been recognized by the Department of Education and the Commission. The Program as recommended has received the endorsement of the Human Resources Committee and is now in the process of being submitted to Planning Board. While the Commission has a function in Community environmental education, there is some question as to it being the lead agency responsible for the environmental program. However, the need for the program exists, and if the Commission must be the lead agency, we are prepared to accept the task. Even without the proposed program, the need for an Environmental Education Coordinator within the Commission is recognized.

Chart I outlines the new organizational structure of the Commission. Additional staff will be acquired over the next three years as programs are developed and approved by government.

During the period, nine meetings of the Environmental Control Commission took place. Attendance and participation by the members at the various meetings was excellent. Two sub-committees of the Environmental Control Commission were formed by the Minister. One sub-committee to conduct a study into the use and control of Beverage Containers in the Province consisted of the following people —

Mr. A. J. Hiscock
Mr. Robert Donnelly
Mr. Keith Draper

The report of this Committee is currently before Cabinet. The second sub-committee related to Solid Waste Management and consisted of —

Mr. A. J. Hiscock
Mr. Clive Stewart
Dr. James Higgins
Mr. John Gilmore

The sub-committee did an in-depth study of the Report prepared by the Air & Solid Waste Management Division on Solid Waste Management in the Province. This Report was approved by Cabinet and the Commission is proceeding with an Implementation Program over a three-year period.

SANITARY SEWAGE AND POLLUTION CONTROL

Bacteriological Quality Surveys

In cooperation with Environment Canada, who provided the staff with a mobile laboratory, bacteriological surveys were carried out on

Summerside Harbour, Montague River, North Rustico and the Kildare River. The surveys followed the same procedure as last year in dividing the Harbour into a thousand foot grid and then numbering the stations in the grid. Each station was sampled at least five times in the period of a week over varying conditions of tides. Results of these surveys have yet to be received by the Commission.

However, from general information provided, the following conditions were noted —

(a) With regard to Summerside Harbour, there has been a marked improvement in the bacteriological quality of the water particularly in the area of the waterfront and extending out to Miscouche Point. There is some isolated high readings being obtained, particularly where the fish plant wastes are discharged adjacent to the wharf. However, these are currently being investigated with the aim of eliminating the discharges.

(b) With regard to the Montague River, the bacteriological quality of the water is excellent; however, during the period of testing, operating difficulties were being encountered at the Montague Treatment Plant, which resulted in some high counts being detected immediately below the Montague outfall. Tests were conducted both in the spring and in the fall and unfortunately both times operating difficulties were being encountered at the Plant. This has resulted in the closure of shellfish on the Montague River being continued until the operating difficulties are being removed. This matter is currently being closely supervised by our Utility Operations Division.

(c) The Bacteriology survey was extended to include Rustico Harbour because of the concern of the Commission with regard to the adequacy of Treatment at Rustico. In 1965, the Province approved the installation of settling tank and chlorination as part of the Rustico sanitary sewage collection and treatment facility. This type of treatment is considered to be grossly inadequate by present day standards, and the fact that chlorination is not carried out, further aggravates the problem. The final results of the survey confirmed that waters within the Harbour are grossly polluted. The Commission is meeting with the Village Commissioners to discuss the installation of more adequate treatment.

(d) In response to complaints from some residents in the Kildare River area with regards to algae blooms, a limited bacteriological water quality study was carried out to determine the possible sources of pollution. A piggery on the watershed is being investigated as the possible source of nutrients to the River. The matter is further complicated by the fact that the Highway serves as an obstruction and causes the ponding of the River.

Preliminary Surveys

Utilizing Consultants, staff members or summer students, the following surveys were carried out by the Commission —

1) Preliminary Engineering Study — Sanitary Sewage Collection and treatment — Tyne Valley.

2) Updating of the Sanitary Sewer Treatment Report — Murray River.

3) An investigation into Sanitary Sewage Discharge — Murray Harbour.

4) Preliminary Engineering Study of Sanitary Sewage Collection and treatment — Cavendish Corner.

5) Investigation into the providing of water and sewer services to the area of Sherbrooke, North of the Town of Summerside.

6) Updating of the Sewage Collection and Treatment report for Bunbury and Southport.

7) Updating of the preliminary report on sewage collection and treatment — St. Peters.

8) Preliminary report on sewage collection and treatment — Alberton South.

Sanitary Sewer Systems and Treatment

The Village of Wilmot in 1973 carried out a sewer extension and constructed two sewage pumping stations to service the Red Bridge area and also the Glover Shore area of the Village. The work was completed September 1973, and all wastes are being pumped to the Summerside Treatment Plant.

The construction of a sewage stabilization pond to service the Town of Borden was completed during the summer of 1973 and this facility is now in operation.

The Town of Georgetown has awarded a contract for the construction of a sewage pumping station and a sewage stabilization pond to treat all the domestic wastes from the Town.

The Village of Crapaud have awarded a contract for the extension of their sewer stabilization pond in order to accommodate the additional housing program currently underway in the Village.

The existing facilities for sewage treatment at the Village of Cornwall are taxed to their limit due to the rapid growth of the Community. The Village Commissioners are currently investigating the possibility of expanding treatment facilities, then the Commission will recommend to Community Services that no additional building permits be issued in that Community until the facilities are provided.

The Village of Miscouche is currently investigating an addition to waste treatment facilities in order to service by gravity flow housing developments located at the eastern approach to the Community. This matter is being studied by a Consulting Engineer.

The Commission has expressed its concern with regards to the current housing programs being carried out in the Province in that there are numerous urban developments being created along the various highways in the Province, major subdivisions in unincorporated areas where septic tanks are being installed in large numbers. Due to the nature of Island soils, the tanks do not function efficiently and it is the policy of

the Commission to discourage development of fringe areas of septic tanks around municipalities which have a sanitary sewer service. The concern of the Commission now is the density of housing in subdivisions with septic tank services. One malfunctioning septic tank could pollute the groundwater supply in the area and result in major health problems. New septic tank regulations have been developed which require a permit for installation of septic tank and an inspection service to be provided. While additional seasonal help is obtained to carry out this inspection service, the program is difficult to administer and police. The long range solution to the problem is, of course, sanitary sewage collection and treatment.

Inspection Services

The following are the figures pertaining to our inspection programs during the year 1973.

(a) Approved Domestic Wells

1. CMHC	70
2. VLA	38
3. Housing Authority	36
4. Permits for wells (Diameter 6" or over)	11

(b) Approved Sewage Disposal

1. Septic Tanks	349
2. CMHC	48
3. Housing Authority	280
4. VLA	21

(c) Plumbing Inspections

Total permits	1,446
Plumbing Fees collected	$15,900

(d) Water sampling and analysis

1. Routine for bacteriological analysis	2,175
Samples with coliform contamination	294
Faecal Analysis	41
2. Chemical Analysis	463
Total solids	46
Iron	55
Chlorides	444
Hardness	287
pH	152
Nitrates	148
Fluoride	1
Petroleum	2

(e) Stream Alteration Applications 28

DEVELOPMENT PLAN PROGRAMS

Urban Pollution Control

(a) Charlottetown Area Pollution Control Facility:

Work on Phase II of the project (sewage treatment plant) has progressed favourably. The contract was scheduled for completion in March, 1974 and now is rescheduled for completion in June 1974. The main reason for the extension relates to the difficulty in obtaining materials, the railway strike, and weather conditions.

(b) Water Supply:

The City of Charlottetown and the Town of Summerside have reapplied for financial assistance under the program for the expansion of water supplies. Both communities are faced with major expenditures for new wells and storage in order to meet the water demands for the area and the Commission is recommending provincial participation in the program.

INDUSTRIAL WASTE PROGRAM

The waste treatment facility to service the Campbell & Burns Plant at Central Bedeque went into operation in June, 1973. While some operating difficulties were encountered with the screening facility at the Plant, the waste treatment facility itself has proven to be very effective in the quality of the treatment and we would anticipate marked improvement in water quality in the southwest branch of the Dunk River.

The waste screening facility for Georgetown Seafoods was put into operation in December 1973. Currently, the province in cooperation with Environment Canada, is conducting a study at Georgetown Seafoods to determine the mesh of fine screening that can be installed on the fish operation and still allow for efficient operation.

MARINE ENVIRONMENTAL STUDIES

The monitoring program of the three major estuaries: Charlottetown Harbour, Summerside Harbour, and Cardigan Bay, was continued during the year. The purpose of this study is to identify natural or man induced environmental deterioration and also to recommend methods of correction. With the construction of major waste treatment facilities on these estuaries, improvements in water quality can be monitored. Also, the adequacy of treatment provided can be evaluated.

Concern was expressed by the Commission on the method of mining sand on the various beaches of the province and a study with regard to the effect of sand mining on the coastal area was carried out by Queen's University. This study was concentrated in the Launching Area and the concerns with regard to excessive quantities being mined and the poor policing of the operation were confirmed. This matter is currently with the Land Use Service Centre which is responsible for the implementation of the program.

AREAS OF FUTURE STUDIES

(a) Agricultural Chemicals:

A number of complaints were received by the Commission with regards to aerial spraying and in one case near Souris, the sickness of a child was diagnosed as being caused by aerial spraving. The matter of agricultural chemicals is being reviewed with the Department of Agriculture.

(b) Disposal of dredging materials:

Indiscriminate dumping of dredging materials on the Coastal area is also a cause of complaints with regard to lobster fishing and also the material being washed back on beaches. The Commission is cooperating with Environment Canada on this matter. The major deficiency in the Program is the lack of detailed information with regards to flow dynamics and currents along the coastal areas. Also the lack of information with regard to the location of various fishery resources.

(c) Agricultural Wastes:

While no firm governmental regulations exist with regards to disposal of liquid manures agricultural wastes, it is felt that this is an area where the Commission must get involved to ensure that a program is developed.

(d) Environmental Impact Statements:

Executive Council Minute No. 16 73 dated 14 February, 1974 states:

> "ENVIRONMENTAL CONTROL COMMISSION
> ENVIRONMENTAL IMPACT STATEMENTS
> AS A REQUIREMENT FOR DEVELOPMENT
> PROPOSALS
>
> Having under consideration Executive Council Memorandum No. 73-79 of 14 February, 1973 (a copy of which is attached to the file copy of this Minute), Council approved the recommendation of the Environmental Control Commission that the Commission be responsible for the preparation of Environmental Impact Statements, and that all departments and agencies of government be directed to have environmental Impact Statements prepared by the Commission as part of any development proposals where there are environmental issues relating to air, land and water."

Commission will pursue this matter as difficulties with certain agencies are being encountered.

(e) Irving Whale:

A Mini-submarine carried out an inspection of the IRVING WHALE in October 1973. However, due to weather conditions and poor visibility the inspection was of limited value. The Commission is having only limited success in obtaining from the Federal Government their plans regarding final disposition or proposed surveillance program for the vessel.

CONFERENCES

Conferences in the Province included:

(a) Annual Meeting of Canadian Council of Resource and Environmental Ministers — Charlottetown, 13-15 June, 1973.

(b) Atlantic Canada Section American Water Works Association — Charlottetown, 30 September - 2 October, 1973.

Conferences outside the Province included:

(a) Man and Resources Conference - Toronto - Novmeber 1973.

(b) Quarterly meeting of Maritime Environmental Ministers.

UTILITY OPERATIONS

Industrial Waste Water Treatment Plants

Campbell & Burns Industrial Waste Water Treatment Plant was placed in operation during the early part of July. Commission staff members assisted Mr. Agnew Arsenault (Plant Operator) with Plant operation, including: operator training, sampling programs and solving a number of problems usually associated with a new plant. The Commission assisted contractor and plant owners in design of in-plant equipment such as lye holding tank and primary screening and conveyor unit.

To date the plant has been discharging an excellent effluent. The average result on sixteen samples collected between October 17 and December 28 are as follows:

Average influent BOD	1,106 MG/L
Average effluent BOD	37 MG/L
Average influent SS	1,182 MG/L
Average effluent SS	51 MG/L

(or 97 and 96% reduction respectively)

Langley Industrial Waste Water Treatment Plant operated during this period with Mr. Frank Greene being the Operator on a part-time basis.

On one occasion in early April we were forced to drain the clarifier due to an accidental lye spill in the main plant. The screenings are being utilized by local farmers as cattle feed, but the filter cake (approximately 5 cu. yds. daily average) is still being disposed of in the plant dump area.

The results of fifteen samples analyzed are as follows:

Average influent BOD	779 MG/L
Average effluent BOD	570 MG/L
Average influent SS	1,274 MG/L
Average effluent SS	187 MG/L

(or 27 and 85% reduction respectively)

For a Primary Treatment Plant these results are good.

C. M. McLean's New Annan Industrial Waste Water Treatment Plant operated during this period with Mr. George Stewart as Operator during the winter, spring, and early summer until replaced by Mr. Garnett Turner for the remainder of the period.

Two severe lye spills occurred (one in March and the other in October) in the main plant during this period. Also, due to the late arrival of new screening equipment relatively unscreened plant effluent was discharged into domestic lagoon from approximately September 15 to November 8. The lagoon will have to be cleaned out as soon as weather conditions permit this spring.

Numerous other problems were experienced after screens were installed and flow was directed to treatment plant. The most serious problem was the large amounts of grease being released by production plant. The underground grease trap which had performed satisfactorily in the

past was not utilized effectively during this period, this was due primarily to personnel problems experienced by production plant management.

Three sets of samples were collected during the month of January 1974, the results were as follows:

Average influent BOD ..... 1,681 MG/L
Average effluent BOD ..... 252 MG/L
Average influent SS ..... 1,301 MG/L
Average effluent SS ..... 107 MG/L
(or 85 and 92% reduction respectively)

The following modifications, etc., were carried out during the period.

1. New stand-by blower unit installed.
2. New scum pump installed.
3. New Laboratory office constructed.
4. Modified suction pipe system on existing air lift pumps in sludge extraction cell.

C. M. McLean's Sherwood Industrial Waste Water Spray disposal system was again operated in a generally unsatisfactory fashion with the operation plagued by equipment breakdowns and saturation of spray disposal area. This plant is seasonally operated (July to November) for processing. Winter operation relates to repackaging of product. C. M. McLean have retained the Consulting Engineering firm of ADI Limited, Fredericton, New Brunswick, to carry out a soils study and design an adequate spray disposal system for the 1974 process season.

MUNICIPAL WASTE WATER TREATMENT PLANTS

Montague Municipal Waste Water Treatment Plant operated during this period, with Mr. Don MacLeod as the Operator for the Municipality. Except for one three-day equipment breakdown, chlorination was carried out on a continuous basis.

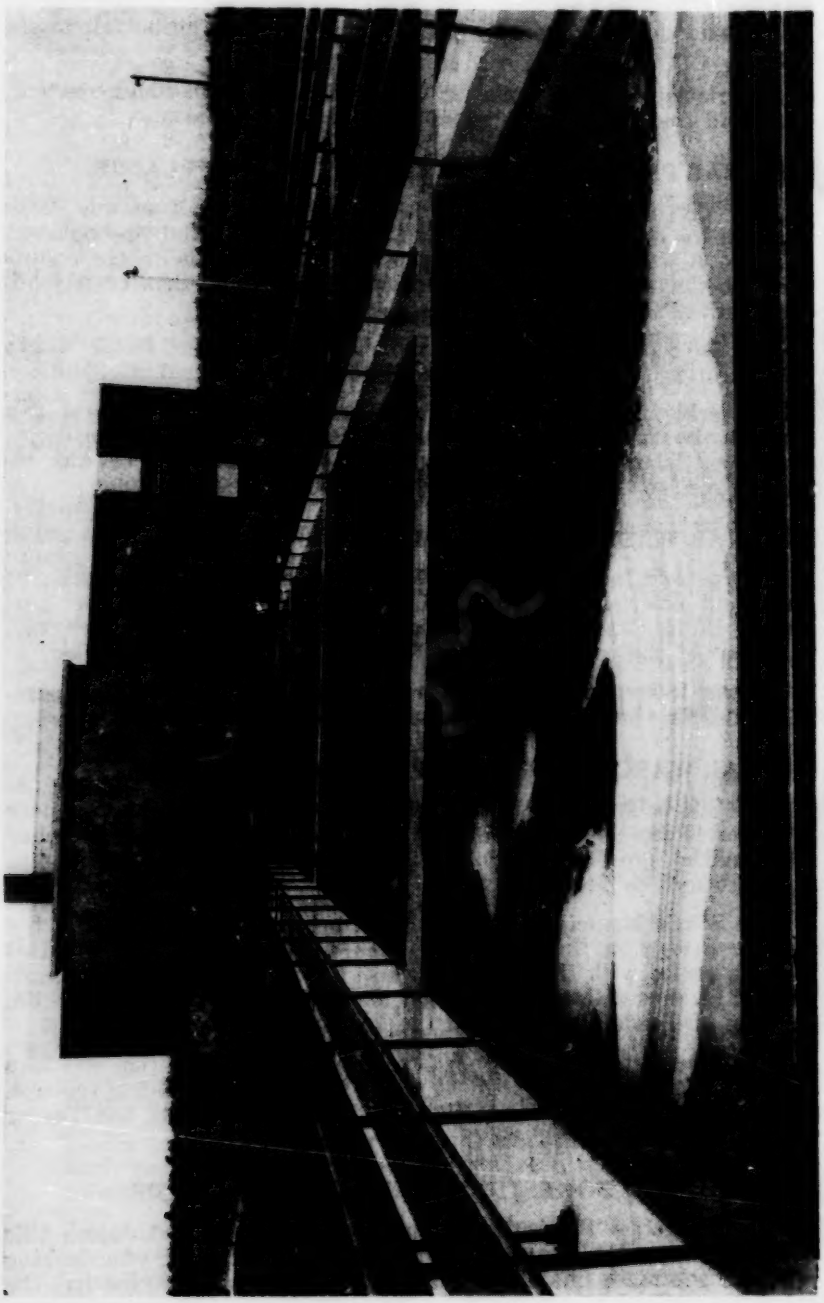
The results of fifteen sets of samples analyzed during the period are as follows:

Average influent BOD ..... 345 MG/L
Average effluent BOD ..... 21 MG/L
(or approximately 94% reduction which is an excellent effluent)

Summerside Pollution Control Centre operated during this period with Mr. Ken MacEwen as Chief Operator. Chlorination was carried out during the entire period with 19.25 Tons of gas used or a daily average of 141 lbs. to treat a flow of 1.32 M.I.G.P.D. and maintain an average residual of 1.25 MG/L. A total of 658 yards of filter cake was hauled to dump area or 2.41 yards daily average.

The results of thirteen samples analyzed are as follows:

Average influent BOD 581-MG/L
Average effluent BOD ..... 305 MG/L
Average influent SS ..... 181 MG/L
Average effluent SS ..... 101 MG/L
(or 48 and 47% reduction respectively)



WASTE WATER TREATMENT FACILITY SUMMERSIDE

Summerside is a Primary Treatment Plant with an outfall to the Channel.

Charlottetown Area Pollution Control Centre is still under construction and and there was no real involvement by our Division.

PROVINCIAL PARKS WASTE WATER TREATMENT PLANTS

Our Division cooperated with the Department of Tourism, Parks Division, in the operation of plants at Cabot, Linkletter and Northumberland Parks. A weekly sampling program was carried out with the results generally better than the previous year. Our Division has been reimbursed by the Parks Division for these services.

We also cooperated with the Provincial Department of Public Works on the operation of Brudenell Park and Wood Islands Terminal Plants.

A weekly sampling program was also carried out on these two plants with the results being acceptable at Brudenell Park and unacceptable at Wood Islands Terminal. A meeting with Public Works was requested to resolve operating problems at Wood Islands.

INDUSTRIAL WASTE WATER PUMPING STATIONS

Georgetown Industrial Waste Water Pumping Station and discharge system again experienced outfall problems. Temporary repairs were performed by Ruliff Grass Ltd. at two locations where leaks were detected. Replacement of the outfall is being recommended by the Commission.

Souris Industrial Waste Water Pumping Station was not operational during this period due to shut-down of fish meal plant.

MUNICIPAL WASTE WATER PUMPING STATIONS

The Souris Municipal Waste Water Pumping Station located near Usen Fisheries was operational during this period with Mr. Gus Campbell as maintenance supervisor. Problems with fish waste blocking pumps were experienced by Mr. Campbell.

The Souris Municipal Waste Water Pumping Station located at the end of the Bridge on the main road from Charlottetown was modified during this period with the Chicago "Flush-Kleen" system being replaced by "Flygt" submersibles. Our Division assisted the Municipality in the preparation of Tender Package and the calling of Tenders.

The Kensington Municipal Waste Water Pumping Station was also modified during this period with the old style centrifugals being replaced with "Flygt" submersibles. Our Division again assisted with the Tender package and review of Tenders.

INDUSTRIAL AND DOMESTIC WATER SUPPLY SYSTEMS

North Rustico Fresh Water Supply System operated during this period with one major expense incurred in the replacement of a leaking coupling on the main line above the fire hall. The system now has the following connections:

36 only 12 months domestic
2 only 6 months domestic
2 only 6 months metered fish plants
1 only 12 months metered fish plant
1 only metered rink connection
3 only twice-normal domestic rate connections.

The total expected revenue on a per annum basis from April 1, 1973 to March 30, 1974 is $2,193. With the normal operating expenses for Caretakers salary, power and leased phone lines projected at $1,750.00

Plus Cost of repairing above mentioned leak 188.08 $1,938.08

Georgetown Fresh-Water Supply System operated during this period with the prime user Georgetown Seafoods being responsible for operating expenses. There are nine domestic connections along with Georgetown Shipyards receiving water from this system. Number three pump was returned to the Factory for a major overhaul during this period. The costs of this repair job is covered by the Capital Replacement Fund.

Montague Industrial Fresh-Water Supply System operated during this period with Langley Fruit Packers Ltd. being the only user. No operating expenses were incurred by our Commission on behalf of this system during this period.

Souris Industrial Salt-Water Supply System operated during this period with a pump motor failure occurring in June. Due to Franklin Electrics inability to supply a replacement motor, the pump was out of service until late August. Our Division is concerned with the number of motor failures that have occurred on this pump and to attempt to prevent this problem from recurring we have made the following modifications.

1. Converted the control system from its original stop on tank level and start on pressure drop (this design has on occasion allowed the pump to short cycle, when a failure occurred in the air supply system) to a stop and start on tank levels (two probes approximately 10" apart), this method prevents short cycling with a decrease in pressure situation caused by air supply system.
2. Installed lightning arrestors on service pole.

FISHERIES DEVELOPMENT

a) Egmont Bay Fresh-water Supply System and,

b) Alberton Wharf Fresh-water Supply System have not been turned over to our Commission for operator supervision.

c) North Lake Fresh-water Supply System was completed during the early part of this period but has not been turned over to our Commission.

d) Keeping and MacKay, Beach Point Fresh-water Supply System was completed during this period with our Division assisting Fisheries with design, Tender package preparation, and construction supervision.

e) During this period our Division cooperated with Fisheries in design, etc., of small Water Supply Systems at the following plants, etc.

Tignish Fisheries Co-op
Malpeque Wharf
Gus Mallard's — North Lake

The Department of Fisheries reimburses the Commission for the above services.

SUPERINTENDENT'S OUT-OF-PROVINCE ACTIVITIES

Visited McCain's Potato Processing Waste-water Treatment Plant at Grand Falls, N.B.

Organized and attended a one-day workshop for Municipal Waste-water Pumping Station Operators at Flygt Canada Ltd., Moncton, N.B.

AIR & SOLID WASTE MANAGEMENT DIVISION

The activities of the Division continued to increase this year in the promotion and assistance of improved air and solid waste management practices throughout the Province. Mr. Rodger Albright, P.Eng. was added to the staff in May and has since become a permanent member of the Division, which now totals two permanent professionals and one temporary technologist on special assignment.

Throughout the year, the staff of the Division attended a number of meetings, seminars and courses as necessary to maintain our commitments to various Federal and Provincial associations and to up-date and increase the Division's ability to maintain its responsibilty.

The more significant are as follows: Federal/Provincial Committee on Air; Pollution Control Show and Seminar; Air Monitoring Equipment Courses; Conference on Land for Waste Management; Potato by-Product Feeding Seminar; Seminar on Woodwaste Burning; Sanitary Landfill Management Course.

SOLID WASTE MANAGEMENT REPORT

The Waste Management Report was completed and presented to the Provincial Planning Board and Treasury Board in December of 1973. Details of site location, program phasing, and operation are currently being worked out, however, the report in general and its recommendations were well received.

LITTER PROGRAM

Litter containers supplied by local oil companies were transported and maintained by two groups of High School students who attended some thirty-seven gatherings during the months of January to August. The students generally assisted organizers in making the public more conscious of litter during Centennial events and various public activities.

The Program met with varying success depending on public willingness to cooperate; however, the groups were well received and in most

Women's Institute Annual Roadside Clean-up

cases their efforts were obvious from the improved appearance of the grounds and the increased effort made by the general public.

Some seventy "Don't Litter" reminder signs were placed along major highway routes with the cooperation of the Department of Highways and three hundred thousand car "litter bags" were distributed to the travelling public by Service Station operators, Provincial Parks, and Tourist Bureaus, who also received the bags for disposal after use. Regular "Don't Litter" reminders were published in the Island press which periodically mentioned the program in their news items.

One local beverage company, in particular, supported the program using the Province's distinctive symbol and incorporating the "Don't Litter" message in their advertisements.

The total expenditure of the Program approximated $10,000 and has received much favourable comment. An expanded program is planned for the coming year.

DUMP PROGRAM

A more concentrated effort was carried out this year in improving rural and local dumps. When the Commission took over the operation of the program from the Department of Highways in June, a fulltime Program Supervisor was hired and provided with two senior student assistants. Some forty-eight community disposal sites were provided with general cleanup and road access improvements. Equipment, under supervision, was provided to maintain periodic landfill and site maintenance operations. Local residents' committees were consulted, where possible, for their preference of site location and were encouraged to take a more active role in site maintenance.

Six new sites were put into operation to serve areas previously without convenient service, while some one hundred and fifty roadside and promiscuous dumps were cleaned and closed. The Program we feel was an obvious success; more care in garbage handling was observed, particularly in those areas where local people were involved in the administration. The total program expenditure to March 31 was approximately $75,000.

WOODWASTE APPLICATIONS

Some eight woodwaste applications were processed relating to the Department of Forestry's assistance program. This number is anticipated to increase as this Agency's responsibility develops in the coming year.

The most notable of these applications was that of the Henderson Lumber Company, where, with the assistance of the staff of Environment Canada, successful negotiations resulted in the development of regulations suitable for that Plant and also to serve as guidelines for future applications.

AIR POLLUTION

A member of the Division attended the Federal-Provincial Committee on Air in early 1973, and negotiated the addition of an SO_2 monitor to the Province's present NAPS Station, which was installed in September.

With the further assistance of the Federal Department, a mobile air monitoring unit was supplied to the Charlottetown area during September and October. This unit provided general base air quality information on SO_2 particulates and haze factors. Although, the final report has not yet been received, the preliminary report suggests that we are in an enviable position with the exception of a number of point emission sources.

Air monitoring in the Charlottetown area is being maintained with relatively simple and inexpensive equipment consisting of four dust-fall jars and ten sulphation plates, which are being serviced by the Division's staff and analyzed by the Federal Service. This monitoring program will be extended to include other municipalities and point emission sources throughout the Province as the Agency's capabilities increase.

An application for approval was received from the Maritime Electric Company Limited to add a second sixty-metre stack, eliminating five present smaller emission sources. Through the assistance of Environment Canada, the proposal was considered to be a major improvement which would meet the Air Quality Guidelines and was approved.

Surveys were conducted with the assistance of the Air Quality Branch of the New Brunswick Government, on three point sources: Hall & Stavert Foundry; Tignish Woodwaste Burner; and, Schurman's Woodworking Plant in Summerside. Preliminary recommendations for remedial action are being developed and will be negotiated in the near future.

ASPHALT PLANTS

Discussions were held with Asphalt Plant Operators early in 1973 to develop methods of reducing the amount of dust and oil waste emissions which have caused numerous complaints from local residents. While all the seven plants installed dust collectors, only three, due to a variety of reasons, were effective. In late summer a survey of all plants was carried out with the assistance of Environment Canada expertise. The final report, which will be received shortly, will recommend specific methods for each Plant as a basis for discussion between the Commission and the Operators.

DERELICT VEHICLE PROGRAM

The present program for collection and disposal of derelict cars in Prince Edward Island is grossly inadequate in that:—

a) The number of hulks being generated annually exceeds the number which the current program collects and transfers to the disposal sites.

b) Existing twenty-three disposal sites are of limited size and during certain periods of the year are inaccessible.

c) The expenses of their removal by towing and their disposal constitute an increasing and unwarranted expenditure of Provincial funds.

d) The elimination of these abandoned vehicles is essential to the maintenance of a clean, attractive, wholesome environment for the citizens of the Province.

e) The reliance on the Province of the Crusher from Sydney Steel Corporation to be available for crushing and disposal of bodies. This is reflected in the fact that in 1972 the Crusher was not available. Although it was available in 1973, there is still some question as to its future availability.

The existing legislation does not clearly establish the responsibility of the individual with regards to the removal and disposal of derelict cars from his yard. The current program, being carried out by Government, is based on the individual authorizing the vehicle to be removed from the yard. If the consent of the individual is not obtained, then the car usually remains as is.

In developing a new government policy, the question to be resolved is whether or not:—

a) The individual owner of a vehicle is to have the responsibility for the final disposition of a derelict car to the disposal site.

b) Whether the Provincial Government is prepared to implement a program of collecting and transferring derelict cars to disposal sites.

If the responsibility is to be with the individual, then an economic incentive must be provided to ensure that the owner of the derelict car presents the vehicle to a disposal site. This could be accomplished by requiring a disposal bond on the car or a levy charged on vehicle registration. In cooperation with the Department of Community Services the problem is being studied with the aim of providing a long range solution to the problem.

In the disposal of car bodies, we would strongly recommend that they be utilized as scrap. The only available market for scrap is the Sydney Steel Corporation and it has been through this Corporation that the services of a Car Crusher has been made available to the Province in 1971 and 1973. A more formal arrangement is required with Sydney Steel in order to ensure that the disposal sites do not become congested with car bodies. The operation of the disposal sites should rest with the Province. Revenue obtained from the sale of scrap could be applied against the operational costs of the sites.

The efforts of the Committee of Environmental Ministers, Council of Maritime Premiers, should be encouraged in carrying out an evaluation study of providing a tri-provincial shredder to accommodate all of the car bodies from the Maritime area.

DIVISION ACTIVITIES

A series of approximately fifteen meetings were attended by Agency staff with Municipal groups, Community organizations, Rural Development Council groups and with a number of interested Citizens groups. The meetings were called to discuss solid waste management and the provincial program of waste management being developed. Where possible, audio-visual aids were used and the meetings were most effective in the receiving of comments and suggestions from the various groups.

Most significant of these meetings was with the Association of P.E.I. Municipalities, where the waste program was discussed in detail and general approval and encouragement was received.

Members of the Division appeared on local television on two occasions and on one "open line" radio program to discuss solid waste management in the province. Talks were given in conjunction with the AWPA meeting held in Charlottetown and with the Association of Health Inspectors held in Truro, N.S.

WATER RESOURCES

General

With its limited permanent staff of one Hydrologist (Director), one Engineer Technician, and a part-time Secretary, the Division concentrated its activities to on-going large scale groundwater developments, field investigations of groundwater contaminations, and day to day general administration. However, with the transfer from the Department of Industry and Commerce to the Environmental Control Commission of the position of Geologist, this Division is looking forward to being in a better position to keep up with its responsibilities, to fulfil its tasks and to devise new approaches to existing and developing concerns and problems.

Groundwater Studies

1. City of Charlottetown:

The investigation of the groundwater potential of the various well fields was continued with an emphasis on Brackley Road and Union Road fields. The possibility of developing deep aquifers by wells with yield of up to 1,000 gpm was confirmed by the analysis of pump test data from the 1972 deep well (14" in diameter, 507' deep). This implies the interesting feasibility of developing more extensively a complex water supply system in which a series of deep wells could become the main reliable source of water during times of very low water table due to prolonged dry weather periods. In consultatoin with the Commission, the City is presently making plans to have this 1972 well in operation for the summer of 1974.

To assess the groundwater potential of an area, it is essential to evaluate the general "run-off", and also the amount of groundwater that discharges into the stream and maintains its flow, called "baseflow", when no other recharge occurs (coldest periods of winter and dry periods of summer). In collaboration with Water Management of Environment Canada, Halifax Branch, several methods of baseflow estimation were reviewed in detail to select the best suited to our P.E.I. psysiographic characteristics and the general shortage of continuous data for the purpose of the Brackley Road and Union Road study, hydrographics from the stream gauging stations on the Winter River at Brackley and Suffolk were analyzed, with the following tentative results.

WINTER RIVER AT BRACKLEY WELLS PUMPING STATION

Drainage area: 2.3 sq. miles
Period of record: December 1968 to October 1973

	*30 year av. total precipitation (inches)	*Mean total precipitation (inches)	Mean runoff per month (in./sq. miles)	Mean base-flow per month (in./sq. miles)	Mean base-flow per day IGPM
January	4.36	3.58	1.38	.96	712.8
February	3.74	3.39	1.73	.89	732.0
March	3.33	4.35	2.36	.79	589.0
April	3.23	3.66	3.70	1.57	1,469.4
May	3.23	4.20	3.07	1.63	1,211.6
June	3.27	3.33	.91	.75	573.2
July	3.88	2.94	.28	.26	192.6
August	3.64	3.79	.13	.06	42.3
September	3.40	2.76	.04	.02	14.2
October	3.81	3.83	.38	.13	94.5
November	4.95	5.02	.72	.40	312.9
December	4.56	5.95	1.42	1.03	768.7
ANNUAL	44.40	46.80	16.12	8.49	6,712.2

* At Charlottetown Airport

WINTER RIVER AT SUFFOLK STATION

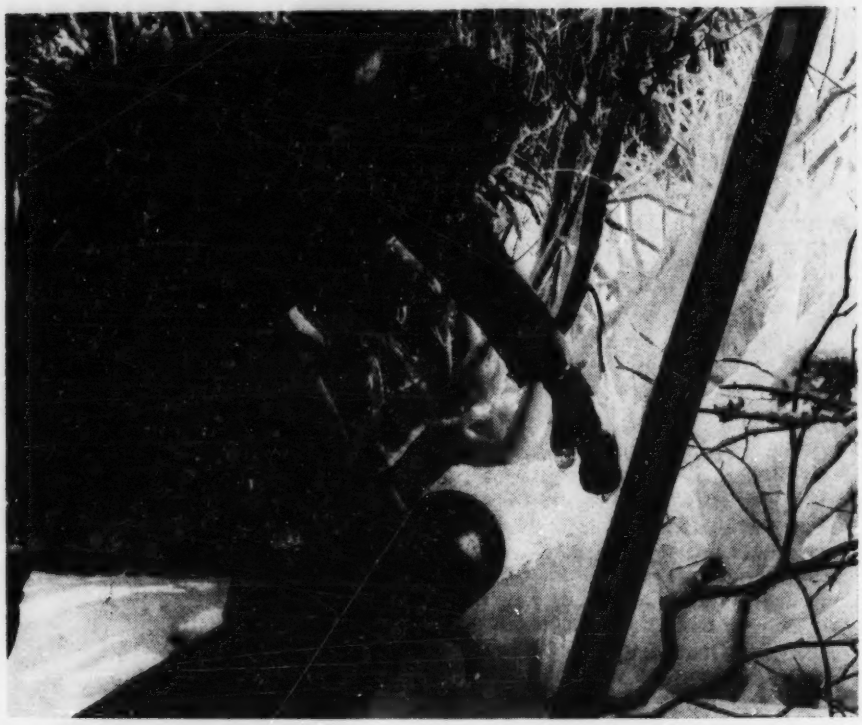
Drainage area: 13.9 sq. miles

Period of record: November 1967 to September 1973

	*30 year av. total precipitation (inches)	*Mean total precipitation (inches)	Mean runoff per month (in./sq. miles)	Mean base-flow per month (in./sq. miles)	Mean base-flow per day IGPM
January	4.36	3.83	1.87	1.61	7,239.4
February	3.74	3.44	1.94	1.37	6,742.4
March	3.33	4.35	2.87	1.45	6,538.2
April	3.23	3.55	4.27	2.74	12,743.4
May	3.23	3.73	3.70	2.45	11,015.7
June	3.27	3.71	1.93	1.49	6,938.8
July	3.88	2.52	1.16	1.00	4,476.4
August	3.64	3.83	.93	.68	3,072.2
September	3.40	2.68	.69	.56	2,559.5
October	3.81	4.19	.94	.64	2,896.7
November	4.95	5.87	2.40	1.65	7,916.9
ANNUAL	44.40	47.33	24.22	16.51	76,161.9

* At Charlottetown Airport

In certain types of groundwater reconnaissance, it is assumed that divides of groundwater basins coincide with boundaries of watersheds, and also that the water-table generally slopes in the same direction as the topographic surface. Several past investigations conducted on P.E.I. (Summerside, North River, New Annan) have shown that these assump-



Test pumping to determine capacity of new well — Summerside

tions should be field-verified. In collaboration with the City, a water-table station, installed with a continuous recorder was established in the latter part of the summer on the watershed adjacent to the Winter River, in the Northwest, a few hundred yards from the topographic divide. Its specific purpose is to search for the possible effects the pumping in the Brackley well field may have on the behaviour of the water-table in this adjacent basin. The recorder is checked two to three times a week, and the hydrographs are computed regularly.

2. **Town of Summerside:**

Throughout 1973, the study commenced in 1969 on the availability of fresh groundwater was continued. The program for that period involved the maintenance of continuous water-level recorders on the six piezometers located in the Timber Park and near the Pope Road Corner, plus the one installed on the observation hole situated near Town Well No. 7. As part of the study, water samples were collected bi-weekly for chloride content analysis from the four municipal production wells and from five industrial wells. All these data together with rainfall information obtained at the Canadian Forces Base and stream-flow data collected at our automatic gauging station on the Platte River were regularly plotted.

Representative data on chloride contents (in parts per million).

Town Wells:

No. 4 — Minimum 22 ppm — August 31
Maximum 35 ppm — February 19
1973 average 27 ppm (25 analyses)

No. 5 — Minimum 15 ppm — January 19
Maximum 20 ppm — August 16 & 31
1973 average 17 ppm (25 analyses)

No. 6 — Minimum 18 ppm — January 18
Maximum 28 ppm — August 31
1973 average 21 ppm (25 analyses)

No. 7 — Minimum 20 ppm — January 12 - February 2 & 19 November 5, June 8
Maximum 25 ppm — August 16 and December 7
1973 average 22 ppm (25 analyses)

Industrial Wells:

Ideal Dairy — Minimum 3 ppm — August 3
Maximum 109 ppm — April 30
1973 average 79 ppm (25 analyses)

Amalgamated Dairies: Minimum 28 ppm — February 2 & 19, November 16 and April 30
Maximum 34 ppm — February 3 and December 7
1973 average 30 ppm (25 analyses)

Jenkins Bros: Minimum 20 ppm — February 19 and April 16
Maximum 76 ppm — April 3
1973 average 49 ppm

Polar Quick Freeze: Minimum 22 ppm — February 19
Maximum 130 ppm — September 14
1973 average 65 ppm.

National Sea Products: This is a saltwater well with a chloride contact fluctuating around 4,000 ppm.

The wide variations in chloride content in most of the industrial wells reflects mainly the large fluctuations of pumping rate as well as the difference in the duration of the pumping. The slight trend of the fresh and salt water diffusion zone to encroach periodically further inland noted in the two previous years appears to persist.

3. Georgetown:

The groundwater investigation in the Georgetown peninsula initiated in the fall of 1969 continued in 1973 on a data collection basis. Two observation holes are instrumented with automatic recorders of continuous water-table fluctuations. Water samples were collected twice a month for chloride analysis. The results of these analyses compared with the 1972 and 1971 data show a very stabilized situation, with chlorides varying between 8 and 12 ppm. Observation hole No. 1 located behind the Shipyard, was partially logged with a conductivity probe. Due to a cave-in, the log could not be completed. Arrangements have been made with a drilling firm to have this hole re-opened to its original depth of 700 ft. as soon as the weather permits.

GROUNDWATER CONTAMINATIONS

A number of contaminations of fresh water wells were reported. Most of them involved only one well, with the contamination often due to improper well construction. A number of wells in this category were drilled or dug over 20 years ago, were too shallow, and had an insufficient length of casing.

Particular attention was given to the contamination caused by the disposing of industrial wastes by the food processing plant of C. M. McLean Ltd. in Sherwood. Our investigation included the history of waste disposal at the plant, the drilling of three holes for water observations, and soil-sub-soil information, plus a number of water samplings for bacteriological and full chemical analyses. It indicated three potential sources of contamination; buried wastes, overspraying of the liquid wastes on incompetent soil and the overflowing of the lagoons. The run-off from the overspraying and the overflowing collected in a series of channels that discharge into a stream passing further down only a few yards away from the important source of water supply for the City of Charlottetown, the Malpeque Well. The area affected by this contamination is to be designated as a special area, and with reference to Articles 11 (1), (b) and 11 (2) of the regulations of the Well Drillers' Act, all P.E.I. Licenced Well Drillers will be advised that special permission will have to be sought from this office prior to any drilling of new wells in this zone.

Two other areas with groundwater quality problems were given much attention: the fishermen's community of West Point, including the Cedar dunes, Provincial Park and the Miminegash area. The two places seem to share the same basic causes for their problems; they are both located near the seawater shore on a flat land surrounded partially by swamp or marsh, and underlain with mainly impervious clayey formations. Two very up-to-date methods were used to find a solution to this problem, remote sensing imagery and geophysics. So far the results have been inconclusive.

P.E.I. WELL DRILLERS' ACT

One of the prime responsibilities vested on the Division is the administration of the Well Drillers' Act and Regulations. In 1973, a marked improvement was noticed in the way the Drillers filled their individual

well reports. However, some cases of unacceptable reports still occurred. These were personally brought to the attention of the Drillers concerned and followed by on-site corrections. Two of the major aims of reports are the accuracy of their technical data, including the well location to be given using the Universal Tranverse Mercator Coordinates (UTM), and the reliability of the description of the rock-cuttings (lithological log). To achieve these aims, personal contacts were maintained with the Drillers and some drilling sites were visited during a special summer project. It is hoped that a similar program can be emphasized again in 1974.

A meeting with all licenced Drillers is scheduled for early April to discuss general problems of mutual interest.

Six Drilling Contractors were licenced to operate on Prince Edward Island in 1973. Up to this date, eleven well-permits were issued by us and 616 Well Drillers' reports were submitted to this office.

LIST OF LICENCED DRILLING CONTRACTORS AND NUMBER OF REPORTS RECEIVED

Lic. No.	Name and Address	Reports Submitted
1	Murphy & Thompson, Kensington, R.R. 2	140
2	D.B. & J. (1971) Inc., Charlottetown, P.E.I.	126
4	John Moore & Sons, 264 North River Road, Ch'town	263
5	Clarence Reynolds, Murray River, P.E.I.	84
8	Sutherland Bros., Morell, P.E.I.	3
9	Alyre Gallant, Tignish, P.E.I.	0

With the assistance of the Federal Government, under the Winter Employment scheme, a substantial start was made for the computerization of our Well Drillers' reports. Just over 1,000 reports were handled for this purpose and the data of 786 reports were processed and transferred to special computer forms to be later entered on punch-cards. This is our initial step towards the formation of a Provincial bank of water-well data, using the GOWON system of Hydrologic Sciences, Ottawa. A request was made to the Federal Government for a similar program for the 1973-74 winter.

STREAM ALTERATIONS

The P.E.I. Stream Alteration Committee composed of a representative each from Federal Fisheries Service, University of P.E.I., Provincial Department of Highways, Department of Agriculture, and the Fish & Wildlife Division, met twice in 1973. It discussed individual applications and improvements in our application procedure, particularly with regard to the speeding up of their handling by the reviewing agencies. A stream alteration information booklet has been prepared, and will be printed when our proposed regulations are approved. The booklet outlines to the general public what stream alterations is all about, why they are regulated and how submitted applications are appraised.

In 1973, twenty-eight applications were approved, three have been rejected and at the end of the year, eighteen were still under investigation.

VARIA

1. On numerous occasions, advice was given to private individuals, industries, consultants and government agencies on well location, groundwater development and Canadian Water Quality Standards.

2. Geophysical surveys were carried out during the summer in selected areas of the Province with surface resistivity equipment on loan to us from Hydrologic Sciences, Inland Waters Directorate, Ottawa. The purpose of the surveys was essentially to check the applicability of resistivity methods to various topographic and geologic conditions specific to this Province. The method was applied in Tignish, Alberton, West Point, Summerside, Kelly's Cross, Lower Malpeque, East Royalty and Georgetown. The resistivity data was interpreted by the Geophysicist of Hydrologic Sciences Division, Ottawa. The conclusions seem to indicate that the method provides good results when carefully applied. Arrangements have been made with the Inland Waters Directorate to have the same equipment loaned to us again in the summer of 1974 for further experiments.

3. Well logging: In the course of our groundwater investigations, and assessments of well contaminations we have been in very many cases handicapped by the lack of geologic log or well data, particularly when old wells were involved. In the past, we were privileged with the possibility of borrowing the logger of the Federal Hydrologic Sciences (20 wells in 1972) or the equipment of the Nova Scotia Department of Mines, Groundwater Division. In 1973, it became increasingly difficult to get the services of these out-of-province loggers at the times they were really needed. This situation however will change with our purchase in 1973 of our own logger, due to be delivered in April, 1974.

4. Groundwater Quality Survey: This program designed for checking groundwater quality fluctuations under various environmental situations was started in the summer of 1972 and it was carried over to the summer of 1973 as a joint venture involving the Canada Inland Waters Directorate, the P.E.I. Department of Agriculture and this Division. Computerized tabulation of all full chemical analyses are still awaited.

5. Remote Sensing: The applicability of methods using remotely controlled censors, especially air-borne censors, to hydrology in general and groundwater in particular was investigated under an on-going program in collaboration with the Canada Centre for Remote Sensing, Ottawa.

OUT OF PROVINCE TRAVEL AND MAJOR MEETINGS:

The following meetings were attended:

Remote Sensing in Hydrology, National Committee, Ottawa June 22, 1973 and November 20-22, 1973.

Remote Sensing: Task Force on Groundwater and Soil Moisture, Toronto, Ontario — December 14, 1973.

International Hydrologic Decade, Canadian National Committee, Charlottetown, June 12 - 14, 1973 organized by this Division and sponsored by the P.E.I. Government and the P.E.I. Centennial Commission.

Maritime Provinces — Federal Hydrologic Group, Fredericton, N.B. June 27 & 28, 1973.

Atlantic Sub-Committee on Flood Hazard Mapping, Halifax, N.S. August 21, 1973.

Groundwater Pollution Course, New York City, November 6-8, 1973.

Maritime Meeting on Environmental Emergencies and Disposal of recovered oil and oily debris — December 7, 1973.

FISH & WILDLIFE DIVISION

GENERAL

The Fish & Wildlife Program was directed toward management of Wildlife and Fish species on the Island. To accomplish the main objectives, the Program was divided into three Sections: Biological, Enforcement, and Revenue. The Biological Section includes: Fishery, Upland Game, Waterfowl, and Furbearers.

BIOLOGICAL SECTION

Fishery Program:

In 1973, the Fish and Wildlife Division was involved in a number of sub-programs within the Fishery Program. The following represents the list of sub-programs.

(a) Opening-Day Creel Census

(b) Annual Fishing Derby

(c) Brook Trout Stocking Assessment

(d) Freshwater Lake Stocking

(e) Early Run Atlantic Salmon Fishery

(f) Fishway Assessment

(g) Stream Improvement

(h) Construction

(a) Opening-Day Creel Census

This is an annual program initiated in 1971 for the purpose of obtaining information on angler pressure and success for the various watersystems in the Province for the opening days of the angling season. A high angler success was realized for freshwater impoundments in 1973, as compared to a low success rate for brackish and salt water areas. As May approached, angler success increased in the brackish and salt water areas.

(b) Annual Fishing Derby

This program was initiated in 1971 for the purpose of acquiring information on the larger brook trout and rainbows and Atlantic Salmon angled in the Province. Spring months of April, May, and June yielded the majority of brook and rainbow trout entries received for the past three years, while a limited number of watersystems yielded all entries received. The largest entries received for each species since 1971 are as follows:

Brook Trout	6 lbs. 4 ozs.	1973
Rainbow Trout	8 lbs. 3 ozs.	1971
Atlantic Salmon	8 lbs. 5 ozs.	1973

Fishway Construction Leard's Pond

(c) **Brook Trout Stocking Assessment**

This program was undertaken in cooperation with the Resource Development Branch of the Federal Department of Environment, Halifax, for the purpose of assessing the benefits of stocking hatchery reared yearling brook trout into selected watersystems throughout the Province. In 1973 all yearling stock leaving the Cardigan Fish Culture Station were fin-clipped while a percentage were tagged. Angling results were computed from tags returned and spot surveys of watersystems stocked. Results delineated those impoundments from which a good return can be realized for the stocking effort.

(d) **Freshwater Lake Stocking**

In late summer, 1973, both Glenfinnan and O'Keefe Lakes were stocked with young rainbow trout through the cooperation of the Resource Development Branch of the Federal Department of Environment, Halifax. The purpose of this program was that of re-establishing rainbow trout fisheries in each lake.

(e) **Early Run Atlantic Salmon Fishery**

The Morell River, Kings County, was surveyed for the purpose of determining the river's potential for supporting a self-sustaining early run of Atlantic Salmon fishery. Such aspects as the availability of adequate spawning and nursery areas were ascertained, in addition to the river's capacity for holding early run fish. A feasibility report being prepared by Resource Development Branch personnel is pending.

(f) **Fishway Assessment**

Fishways constructed under Division programs in 1971 and 1972 were assessed in 1973, during the gaspereau run, for their effectiveness. All fishways assessed (Arsenault's Pond, Tignish; Blanchard's Pond, Tignish; Warren's Pond, Cherry Hill; MacDonald's Pond, Corraville) were found to be effective in passing gaspereau upstream of former obstructions. In view of the positive results realized, all fishways assessed were deemed effective for passing brook trout and Atlantic salmon to formerly inaccessible spawning areas upstream.

(g) **Stream Improvement**

The stream improvement program was initiated in 1971. Objectives of the program include:

(1) Improving fish habitat by working in the watersystem removing undesirable debris, cutting selected vegetation, installing stream improvement devices.

(2) Providing easy access to a watersystem by cutting an access trail along the system.

This is a labour intensive program requiring good supervision. In 1973, stream improvement work was carried out on sections of the Midgell River, Orwell River, and Southwest Brook. The work on the Midgell

River was undertaken by an OFY Group from the area in cooperation with the Division. Labour for the Orwell River and Southwest Brook projects was supplied by students hired under the Armed Forces Student Employment Program. For the three watersystems worked, the objectives as outlined were realized.

(h) Construction

The greatest portion of the Fishery Budget is devoted to the construction of fishways and new control structures. In 1973, fish passage facilities were constructed at Strickland's Pond, Murray River, resulting in thirteen miles of watersystems above the pond being opened up to migrating fish species.

Work initiated in 1972 at Leard's Pond, Riverton, was completed in 1973. The new fishway constructed at this dam site opened up over 20 miles of river formerly inaccessible to migrating fish species. New control structures were constructed at Cass' Pond, Covehead (cooperative project with the Department of Highways); Dewar's Pond, Pooles Corner; and Johnston's Pond, Clear Springs (cooperative project with Ducks Unlimited (Canada).

WATERFOWL PROGRAM

Breeding Pair Survey

A waterfowl breeding pair survey has been conducted on P.E.I. for the past four years. The objective of this survey is to obtain an annual index of the number and species of breeding waterfowl on the Island.

Due to an early spring breakup in 1973, the number of breeding pairs utilizing inland fresh water habitat increased 46% over 1972, while those utilizing coastal-barrier beach habitat declined by 26%. Inland tidal habitat use remained the same. The numbers of breeding pairs of all species increased slightly in 1973 and the species composition remained relatively constant.

Brood Survey

Brood surveys flown by helicopter have been conducted for the past three years on nine study areas on P.E.I. In addition, ground surveys of broods observed all over the Island have been conducted for the past four years. The objectives of these surveys are:

(a) To obtain an annual index of waterfowl production.

(b) To obtain an index to species composition and breeding chronology.

A total of 298 broods of ten different species were observed in both helicopter and ground surveys in 1973. This represents an increase of 19% over production in 1972 on comparable areas. The species composition changed little from 1972 but all species showed increased production. Early spring breakup and good weather conditions during the nesting and brood rearing season appeared to have contributed to this excellent production year for all species.

Habitat Improvement

The waterfowl habitat improvement program consists of the creation and maintenance of wetlands and the improvement of food, cover, and nesting conditions for waterfowl.

(a) **Ducks Unlimited**

For the past three years, Ducks Unlimited (Canada) in cooperation with the Fish and Wildlife Division has aided in constructing control structures for nine marshes on P.E.I. totalling 1,466 acres. Work on a 20 acre pond at Clear Springs, a 25 acre marsh at St. Teresa's and a 280 acre marsh near Martinvale, was started in 1973. The contribution of Ducks Unlimited has enabled the province to increase the amount of habitat available to waterfowl, furbearers and other marsh dwelling species as well as maintain the fishery resource in such areas.

(b) **Wild Rice Planting**

An experimental planting of wild rice was made at the Forest Hill Marsh in the fall of 1972 and the results assessed during the past summer. The plots were highly successful, showed good growth and produced an abundance of seed. Since wild rice provides excellent food and cover for waterfowl, several additional areas have been selected for seeding in 1974.

(c) **Wood Duck Nest Structures**

The wood duck has extended its breeding range to P.E.I. in recent years. To augment the lack of natural nest cavities, a number of nest boxes were erected at Selkirk Pond and two clutches of eggs were produced during the 1973 breeding season. Additional nest structures are to be erected in two new areas during the winter months.

Indian River Wildlife Management Area

Although the Indian River impoundment provides an important migration stop for Canada Geese, the area is not used by geese during the nesting season. Work is continuing toward establishing a breeding flock of Canada Geese in the area. The small flock of 14 birds introduced in 1972 was augmented by the addition of 28 goslings and 12 two-year-olds in 1973. Most of this flock migrated south for the winter unlike the smaller flock the previous year which over-wintered on P.E.I. Adequate winter survival should result in natural reproduction in the area next spring.

Brood surveys conducted in the summer indicate that 20 broods comprising eight species of ducks were produced on the 44 acre impoundment in 1973.

Periodic Canada Goose Survey

For the past two years, the P.E.I. Fish & Wildlife Division has cooperated with the United States Bureau of Sports Fisheries and Wild-

life in obtaining an annual inventory of the Canada Goose population in the Atlantic Flyway. The survey is flown in a light aircraft in mid-November and numbers of geese and other waterfowl utilizing P.E.I. waters at this time are recorded. This year approximately 8,500 geese, 5,000 black ducks, 1,600 goldeneyes, and 1,200 mergansers were observed. There was no appreciable change from last year.

Controlled Goose Hunting

This aspect of the Earnscliffe - China Point Cooperative Shooting Preserve continues to show an increase in popularity. The number of participants in the Tuesday evening draw increased to 507 from 410 although the total number of geese taken declined to 70, down from the previous three year average of 90. Although huge flocks of Canada Geese frequented the area for most of the season, poor goose hunting weather on the days of the hunt was held contributory to the decline in kill.

Winter Waterfowl Inventory

This survey is flown in cooperation with other wildlife agencies to obtain an inventory of waterfowl over-wintering in the Maritimes Provinces. The number of waterfowl present in winter varies from year to year depending to a large extent on local ice conditions, however, the number obtained contributes to the Maritime and Flyway-wide inventory of all waterfowl.

A total of 2,400 black ducks, 1,400 goldeneyes, and 1,100 mergansers were observed in 1973. Incidental species such as oldsquaws, mallards and Canada Geese were again observed in small numbers.

Banding Program

This program is done in cooperation with the Atlantic Flyway Cooperative Banding Program to determine harvest patterns, mortality rates and rates of kill of waterfowl on P.E.I. It involves both summer (brood) banding and winter banding. Ducks are captured by use of bait traps, night-lighting with an air boat, and dogs. In 1973, a total of 1,801 ducks comprising ten species were banded on P.E.I. This was the result of the joint efforts of the Canadian Wildlife Service, Ducks Unlimited and the P.E.I. Fish and Wildlife Division.

Woodcock Survey

P.E.I. again participated in the woodcock singing ground survey in May, 1973. There was no appreciable difference in the number of breeding woodcock from the previous year, with an average of 2.6 birds heard per comparable route driven.

FURBEARER PROGRAM

Wild Fur Industry

For the past three years, the Fish & Wildlife Division has been attempting to develop means to monitor the wild fur industry on P.E.I.

Through the drafting and enforcement of new Regulations, the province now is able to determine the number and species of wild furbearers trapped on P.E.I., the number of people who participate in the industry (both trappers and fur buyers), and the approximate value of wild fur to the economy of the province.

The number of furs exported from the province for the last two years are given in Table 1. An estimate of the total value of wild fur to the Island during the 1972-73 trapping season is summarized in Table 2. During 1972, a total of 221 Resident Trapping Licences were sold and 219 Junior Trapping Permits were issued. Five residents and one non-resident were engaged in buying fur on P.E.I.

TABLE 1

FURS EXPORTED FROM P.E.I.

Species	1971-72	1972-73	Difference	% Change
Muskrat	3,639	3,183	— 456	—13
Red Fox	2,694	1,897	— 797	—30
Raccoon	495	663	+ 168	+34
Wild Mink	328	422	+ 94	+29
Squirrel	9	80	+ 71	—
Weasel	52	54	+ 2	—
Ranched Mink	5,585	4,382	—1,203	—
Ranched Fox	389	326	— 63	—

TABLE 2

AVERAGE PRICE FOR SEASON (1972-73) RECEIVED AT ONTARIO TRAPPERS' ASSOCIATION FUR SALES FOR FURS FROM P.E.I. AND ESTIMATED VALUE

Species	Exports ('72-'73)	Average Price	Value
Beaver	—	$21.51	—
Muskrat	3,183	2.78	$8,849
Red Fox	1,897	28.29	53,666
Raccoon	663	10.14	6,723
Wild Mink	422	11.72	4,926
Squirrel	80	.82	66
Weasel	54	.45	24
	TOTAL ESTIMATED VALUE	=	$74,254

Fall Beaver Inventory

Beaver surveys were conducted for the past two years to assess the status and distribution of the beaver population, monitor habitat conditions and determine the effect of closed seasons on the beaver population. Fifty-four streams which drain an area of 900 sq. miles east of the Hillsborough River were flown in late October. A total of 78 active colonies were counted, an increase of 37% over the previous year's total of 57 and the colonies were more evenly distributed than in 1972.

An open season of one week in November 1973, resulted in a harvest of 150 beavers. Preliminary analysis of the age structure of the sample indicates a highly productive, increasing population with kits comprising about 45% of the total number trapped.

Beaver re-introduction

The Fish & Wildlife Division is currently engaged in a program to re-introduce beavers into vacant habitat in the western portion of the province where beavers were last seen in the late 1800's. Three beavers from eastern P.E.I. were live-trapped, weighed, ear-tagged, and transferred to Bain's Creek in the western tip of Prince County in early September where they appear to be well established on two sites in the stream. Additional re-introductions are planned for 1974.

Red Fox Investigations

The fish & Wildlife Division is cooperating with the University of P.E.I. in a study of red fox populations on the Island. The red fox is currently the Island's most valuable furbearer and is being harvested due to high pelt prices. Knowledge of the basic biology and population dynamics of this species is essential for proper management. Preliminary analysis of data collected during the study is expected in April, 1974.

UPLAND GAME

Earnscliffe - China Point Cooperative Shooting Preserve

The pheasant preserve operated for 58 days opening on September 28th and closing on December 22nd. Once again the preserve was closed on Mondays with the exception of those statutory holidays which fell on Mondays. During the last two weeks of operation the preserve operated on Friday and Saturday only. The last four days operated on a "pay as you shoot" basis with the hunters paying for only those birds harvested.

A total of 742 preserve licences were sold during the 58 day season for an average of approximately 13 hunters per day comparing with 546, 530, and 484 in 1972, 1971 and 1970 respectively.

A total of 1,059 pheasants were released on the preserve in 1973. A total of 624 birds were checked through the game Officer's booth, 69 birds of this total were unbanded and are positive indication of natural reproduction in the Earnscliffe area. However, some of the unbanded birds were undoubtedly escapees from rearing pens on the preserve. A total of 555 banded birds (52.4% of the birds released) were checked through the booth. This is a slight increase in the return rate over the 1972 season and compares favourably with the results of 1971 and 1972.

Seven hundred and seventy-four hunters spent an average of 4.32 hours in the field to accumulate a total of 3,345.5 recreation hours. This total represents a considerable increase over the 1972 figure.

Habitat Improvement

This project is intended to evaluate the effect of management techniques on the habitat of both farm and woodland upland game species.

Woodland cutting practices are evaluated on a continuing basis. Clear cutting of strips or small blocks is desirable as it improves the habitat for wildlife and it appears that this type of cutting is feasible in certain situations.

The most important factor for farm game species (particularly the pheasant) is the provision of suitable hedgerows to be used for cover, food and nesting sites. Several candidate plants have been tested with little success but this project should continue as new candidate species become available.

These projects were all carried out on Fish & Wildlife Division property.

Population Research

This project is designed primarily to evaluate winter mortality of the grey partridge. Coveys of partridge are observed on a regular basis throughout the winter months as conditions permit. Heavy winter mortality of grey partridge apparently correlates closely with long periods of heavy snow cover.

Introductions

The intent of this program is to explore the possibilities of introducing new species of upland game to the province in an attempt to provide increased hunter-recreation possibilities.

In 1973, the Japanese Green Pheasant was discarded as a candidate species for introduction. The Japanese Greens exhibited low egg laying rates, low fertility, and poor survival after hatching. As a consequence, they are a very difficult species to propagate.

The main emphasis of this program is now centered on the Korean Ring-Necked Pheasant as it exhibits many desirable characteristics and in addition propagation results have met with moderate success. Fertility rates are high but rearing mortality is considerable as the birds are extremely nervous as they are only two-three generations removed from the wild.

One hundred Korean Ring-Necked Pheasants were released in the Mt. Stewart and Belle River areas during the fall of 1973, and approximately 100 Korean Pheasants are being held over-winter at our Glenfinnan rearing facility as brood stock.

Trial releases of a Korean-Chinese hybrid pheasant carried out in 1972 were evaluated in the spring of 1973 by conducting cock crowing counts. All areas censused contained crowing cocks and band returns from road kills indicate over-winter survival was good. These results are very encouraging and it is recommended that the Korean Ring-Necked Pheasant program be continued.

Game Harvest Survey

The object of this project is to establish an index to the harvest levels of game animals on P.E.I. This information is vital to the effective management of wildlife populations.

Survey results are very encouraging with a 35% - 40% hunter response being realized on a single mailing. This survey should be continued on an annual basis.

Enforcement Section

As in other years, much of the Fish & Wildlife Conservation Officers' efforts were directed toward enforcement of the P.E.I. Fish & Wildlife Protection Act and the Migratory Birds Convention Act. Table 1 illustrates a substantial increase in convictions in 1973.

TABLE 1

VIOLATION	1969	1970	1971	1972	To Dec. 31st 1973
Fishing without licence	5	2	9	4	10
Hunting without provincial licence	—	—	2	4	5
Hunting without Federal permit	—	1	4	3	13
Illegal use of licence	—	—	—	—	—
Fishing out of season	—	3	2	1	6
Hunting out of season	2	1	0	1	3
Fishing on enclosed property	—	—	—	—	—
Hunting on enclosed property	—	—	—	—	—
Hunting on Sunday	1	6	5	—	4
Fishing with more than one line	1	—	1	—	2
Hunting with unplugged shotgun	—	1	—	—	3
Illegal hunting with .22 rifle	—	—	—	—	1
Loaded firearm in vehicle	2	—	8	—	—
Discharging firearm from vehicle	—	—	—	2	1
Discharging firearm within 200 yds. of dwelling	—	—	—	—	1
Hunting a protected species	—	—	1	—	2
Illegal possession of migratory birds	2	—	—	—	—
Use of live decoy	1	—	—	—	—
Spearing salmon	9	3	2	—	—
Illegal use of power boat	—	—	—	—	—
Pollution of natural waters	1	—	1	—	—
Failing to stop on command	1	—	—	—	—
Hunting in baited area	—	2	—	—	—
Netting trout	—	1	—	—	—
Hunting Raccoon without permit	—	—	—	1	—
TOTALS	25	20	35	17	51

Revenue Section

Revenue from various licences administered by Fish & Wildlife Division are illustrated in Table 2.

TABLE 2

LICENCE SALES

Year	Resident Angling	Non-Resident Angling	Resident Hunting	Non-Resident Hunting	Revenue
1969	9,195	2,733	3,789	74	$34,907
1970	9,067	2,917	4,001	85	35,749
1971	9,368	2,919	4,268	144	37,469
1972	8,420	2,800	4,637	171	36,224

Year	Resident Trapping	Resident Trapping Under 16	Revenue
1972	221	219	$ 221

ENVIRONMENTAL EDUCATION COORDINATOR

General

During the past year, the Commission has become involved in environmental education and public participation programs. It is obvious that there is public awareness and concern for the environment, however, if the Island is to retain "quality of life" we must become more involved in the future.

The Environmental Control Commission is committed to the fact that the essential tools and knowledge to deal with environmental awareness must be at the disposal of every possible citizen of the Province.

PUBLIC PARTICIPATION

Advisory Council

The Advisory Council to the Environmental Control Commission has been meeting regularly since its inception by the Lieutenant-Governor-In-Council in May of 1972.

Two changes in the composition of the Council were made during the past year, Mr. Gary Kielly was replaced by Mr. Reg MacLaren and Mr. Jim Allison by Mrs. Diane Griffin.

The terms of reference of this Council are to advise the Environmental Control Commission in four general areas:

1. Status of the environment and threats to it.
2. Priorities for provincial or joint federal-provincial government action.
3. Effectiveness of the provinces' efforts to restore, preserve, and enhance the quality of the environment.
4. Other matters which will be referred to the Commission as the need arises.

To date, the Council has submitted several recommendations to the Commission on Solid Waste Management, Environmental Education, Soil Erosion, and general cleanup of existing pollution.

According to the Council, it is their wish that individuals and groups consider it their responsibility to initiate projects and programs in their areas to cleanup pollution and work to prevent further occurrences.

Organizations

There is no question that a number of organizations are becoming involved in environmental matters. The Environmental Control Commission, on several occasions, assisted some of these organizations in developing and carrying out programs. The organizations that are most involved in the Commission are the Women's Institutes, Allied Youth, and the Boy Scout organization.

An environmental seminar was held with the Allied Youth last spring to discuss environmental projects. There were a number of field trips organized for the Boy Scouts. Also, snowshoes were made available for the Boy Scouts during a number of weekends for winter fieldtrips.

Cleanup Week

A letter was sent out to all municipalities offering our assistance in advertising their cleanup campaign in the respective communities.

The climax of cleanup week was the Island-wide roadside cleanup campaign sponsored by the Women's Institutes and held on May 12th. It was estimated that approximately 6,000 people were involved in this cleanup. The Commission was involved in supplying garbage bags and publicity for the cleanup.

ENVIRONMENTAL EDUCATION

Activities in Environmental Education have increased considerably during this year. It is not our intention to become involved in the curriculum aspect of Environmental Education; however, we do feel that we can make major contributions using resource personnel and advising on programs. It does appear that the Department of Education are now taking a much more serious look at environmental education and it is becoming a greater priority than in the past.

Through the initiative of a number of teachers, the Commission was involved in assisting to develop and carry out several residential camps of two or three days duration at the Boy Scout Camp in Camp Buchan. These camps stressed the importance of our relationship with our surroundings.

We have been involved during the past year in assisting the Area III School Board to develop a program of environmental education at their centre in Warren Grove. This is a one-room school surrounded by a pond, stream, open fields, marsh and woodlots. Permission was received from the landowners to use the area surrounding the school. There are fieldtrips for the City Schools on the average of three or four per week involving about 125 students each week.

The Commission regularly receives requests from the teachers to conduct fieldtrips. During the spring and fall, at least three requests are received weekly. During the winter months snowshoeing is very popular among students. When snow conditions are suitable, at least 150 students are involved daily. In all fieldtrips, the teacher is actively involved as much as possible so that, in the future, he or she could conduct fieldtrips without our assistance.

A report on recommendations for Environmental Education was completed by the Interdepartmental Committee on Environmental Education. This Committee had two representatives from the Environmental Control Commission, two from Education, one from the P.E.I. Teachers Federation and one from the Environmental Advisory Council. The report is presently under consideration by the Departments involved.

As a supplement to the report by the Interdepartmental Committee, a teacher was contracted during part of the summer to suggest a program of activities at an Environmental Education Centre. This report has been completed.

The response to Environmental Week was by far the best to date. Most Municipalities across the Island had Community cleanups and the participation in these campaigns was very good. The highlight of Environmental Week was the fieldtrip conducted by the staff of the Commission for schools across the Island. There were 3,200 students who participated in these fieldtrips during the week. The fieldtrips involved the students in guided tours on the following topics: Beaver Dams; Duck Marsh; Pheasant Rearing; Fish Hatchery; Fish Ladder; Ground and Surface Waters.

Information Dissemination

Two issues of the "Environeer" have been published and a third is presently being printed. Approximately 2,000 copies of each newsletter have been circulated.

The "Environeer" has been well received and it will be published quarterly.

Approximately 160 letters are received each month requesting information on pollution, etc., from all parts of the Province and Canada. A package of material is sent in answer to all requests.

The three Maritime Provinces have been cooperating this fall on a jointly financed environmental awareness campaign with the theme "In the Maritimes . . . we still have time to save our Environment."

A media campaign ran through October and part of November, including newspaper advertisements, radio and T.V. commercials. There were sets of four educational posters, complete with teachers' notes, developed for use in the classroom. Also, on the way is an illustrated booklet entitled "Our Maritime Environment" which discusses the more pressing environmental problems in our area. Paper litter bags provided under this program have been distributed this fall through Motor Vehicles offices across the Island.

Another item now in distribution is the "Captain Enviro" educational comic book. It, too, is concerned strictly with the Maritime Provinces and contains many suggestions on how all of us can help protect and improve our environment.

In order to increase awareness of the Commission's activities, a booth was set up at both the Lobster Carnival and Old Home Week (Provincial Exhibition). Also the Solid Waste display was exhibited in the Women's Institute Building.

MARINE ESTUARY PROGRAM

Coastal Zone Activities

In order that conditions of late 1973 can be understood, this report must first relate certain events of 1972. In that period the section was mainly responsible for coastal water matters, though various other advisory, planning and research functions were assigned from time to time. That emphasis on coastal matters reflected the Commission's growing concern for environmental quality in the coastal zone and the opportunity, presented early in 1972, of creating a large scale federal-provincial investigation of the province's capability for coastal resource development.

The remaining activities in 1972 reflect the variety of resource and technical problems that arise intermittently and which, though demanding solution, do not yet warrant additional staffing of specialists in a province of this size. They are frequently problems requiring co-ordination, a scientific input or an ecological interpretation, and are often best approached from a background of broad experience in natural resources and regional conditions. Examples can be found in planning, environmental impact assessment, technical information requirements, inter-de partmental and inter-governmental affairs, etc.

Our coastal zone work in 1972 was recognized to the extent that a skeleton division existed within the Commission, but its formal establishment was conditional upon the implementation of the Canada - P.E.I. Coastal Zone Program. Completed and presented to both governments late in 1972, that proposal remains viable but, because federal assent to it seems unlikely within the next year or two, division status for such work had to be deferred. Meanwhile, other constraints upon the Commission in the form of added responsibilities, expanding activities and disproportionate work loads necessitated an internal reorganization in the fall of 1973. As a Resource Planner, Mr. Stanley E. Vass was named as an Environmental Policy Advisor, reporting directly to the Chairman of the Commission.

Programs of Environmental Policy Advisor

Specialist planning and advisory work defies rigid classification, varying as it does with the diverse and often unpredictable nature of the problems and circumstances. The Advisor is made available for such work among divisions of the Commission, for environmental inputs to other departments and in a liaison capacity with outside agencies.

Though the program can only be generally described and planned its policy must emphasize two things which, in turn, prescribe certain continuing activities:

(1) Provision of a capability for dealing with the unexpected;

(2) creation of methods for anticipating special problems and needs, particularly in the interdepartmental context, and for ensuring that these are satisfactorily resolved.

CHARLOTTETOWN HARBOUR SAMPLING MARINE ESTUARY PROGRAM

Both requirements call for keeping abreast of developments in fields and jurisdictions to which the Commission relates, and the second can further be served by wider application of the environmental impact assessment.

A recent government edict requiring other departments to review, with the Commission, any proposal having potential adverse effects upon the environment is a notable advance in integrated planning. Still more desirable would be more extensive routine communication between the Commission and other agencies, whereby conflicts might be anticipated and cooperatively resolved before they reach difficult proportions.

One course to be avoided is that of having to interject an environmental concern once a management decision has been taken or a development begun. This can be administratively awkward, expensive and result in strained relations. We can do much to prevent such "action after the fact" by our readiness to participate in inter-agency discussion, greater effort at disseminating information and active support of public participation.

The following are main elements of the program.

(a) **Environmental Impact assessment**

This valuable innovation in planning has been used only occasionally in P.E.I., perhaps because many believe it is applicable only to large scale industrial developments. To the contrary, it is an excellent method for viewing a proposal, however minor, in all its dimensions and relationships. But we have yet to devise a method that would suit the province's political, administrative and environmental peculiarities, and that becomes a subject for our continuing study.

Among the benefits of the environmental impact assessment are:

1) that is provides specific environmental quality objectives to planning;
2) reveals impending resource use conflicts;
3) enhances project planning and its results;
4) fosters integrated resource management;
5) provides new perspectives on policy change.

(b) **Specialist Planning and advisory work**

Special technical services and information, to at least a preliminary level, are supplied or obtained by the Policy Advisor. Subjects include land and water resources, their related sciences and various services of governments, universities, etc. This gets around the need for duplicating the capability in other departments and fills the gap between routine and consulting services. It can also expedite the provision of further special services should they be required.

(c) **Inter-agency planning and co-ordination**

As the inter-related nature of resource problems becomes more widely recognized, the combined approach to solving them will be increasingly practiced. Because environmental considerations should attend

virtually all resource use decisions, it is in the Commission's best interests to promote that approach. However, even with willing cooperation this is not easily accomplished in our compartmentalized social structure, and effort must be sustained at improving communications and the transfer of experience. To that end, most of the Advisor's activities have been concerned with inter-agency communications.

(d) Inter-governmental affairs

A logical extension of inter-departmental work, this has ranged from inter-jurisdictional planning to the conduct of federal-provincial programs. The Advisor serves on working committees, represents the Commission's interests and may serve as alternate to others of the Commission's staff.

(e) Information, education, public relations

These responsibilities, shared throughout the Commission, include lecturing, public addresses, the writing of information articles and sundry public relations. Important developments in these fields were the institution of "Environmental Week", and the Commission's quarterly publication "The Environeer". The Advisor assisted with the former and has contributed regularly to the latter, including the first in a projected series of technical articles written in the popular vein.

Forecast

The Commission's salient objective is that of promoting balance among resources management as will preserve and enhance the natural processes that give rise to those resources. That places the Commission in a position, with respect to management agencies and the user public, where cooperation, co-ordination and education are the most promising methods for achieving its goal. This demands of us considerable effort at communications. In this context the Environmental Policy Advisor's responsibilities become significant and his increasing activity therein, evident.